

REMARKS

Claims 1-6 are pending. By this Amendment, Claims 1-2 are amended. Applicants respectfully submit no new matter is presented herein.

Claim 2 Allowable

Applicants appreciate and acknowledge the indication by the Examiner that Claim 2, although rejected under 35 U.S.C. §112, second paragraph, would be allowable if rewritten to overcome the rejection and to include all of the features of the base claim and any intervening claims.

Claim Rejections – 35 U.S.C. §112

Claim 2 is rejected under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter regarded as the invention. Applicants respectfully submit Claim 2 was amended responsive to the rejection. As such, withdrawal of the rejection is respectfully requested.

Claim Rejections – 35 U.S.C. §103

Claims 1 and 3-5 are rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,097,345 to Walton in view of Wen-Shyang et al. (hereinafter "Wen-Sheng"). Claim 6 is rejected under 35 U.S.C. §103(a) as being unpatentable over Walton in view of Wen-Shyang as applied to Claims 1 and 3-5 above, and further in view of U.S. Patent No. 6,188,368 to Koriyama et al. (hereinafter "Koriyama"). Applicants respectfully traverse the rejections.

Claim 1 recites an on-board antenna including a radiation element provided on a dielectric substrate; and a grounding conductor surrounding a periphery of an outer edge portion of the radiation element at a position spaced away outwardly from the

outer edge portion; wherein the radiation element has an inner cut-out portion so that the surface of the dielectric substrate to be exposed therethrough, and wherein the radiation element and the grounding conductor are provided on the same surface of the dielectric substrate.

Applicants respectfully note the present invention is directed to an antenna in which the radiation element and the grounding conductor are provided on the same surface of the dielectric substrate. The antenna does not use TM modes and is not concerned with adjusting the TM modes. Rather, the present invention is concerned with symmetrically adjusting the properties of the radiation element, so that a circularly polarized wave mode is generated.

Applicants respectfully submit the applied art of record fails to teach or suggest such features.

Applicants respectfully submit Walton and Wen-Shyang disclose different types of antennas and as such, one of ordinary skill in the art would not be motivated to look to the teachings of one to modify the other.

In particular, Applicants note Walton discloses a window bezel (40) having a conductive patch (18) that is used as a grounding conductor. For example, as shown in Figure 2 of Walton, a dual band antenna (16) fed from a coaxial cable (32) by a planar strip transmission line is formed from a strip (34) of transparent conductive material bonded in the same interface, that is, between the same layers of the window, where the conductive layer has a slot located therein. The strip (34) extends outwardly from an interior edge of the slot at a feedpoint (28) alone and spaced within a linear gap (36) formed in the conductive sheet (18) into a conductive connection with the central

conductor (38) of the coaxial cable (32). The slot of the antenna (16) includes slot legs (20, 22) which extend in transverse directions from the feedpoint (28) to slot leg ends (24, 26). The Office Action identifies the feedpoint (28) as the radiation element and admits that the feedpoint or radiation element (28) of Walton does not include an inner cut-out portion wherein the surface of the dielectric substrate (12) is exposed therethrough. To overcome this deficiency in Walton, the Office Action cites Wen-Shyang and asserts that it would have been obvious to one of ordinary skill in the art to incorporate the radiation element taught by Wen-Shyang into the dual band antenna (16) disclosed by Walton to provide a radiation element with desired properties, such as specific radiation patterns.

Applicants respectfully disagree with the assertion made by the Office Action and respectfully submit that one of ordinary skill in the art would not be motivated to modify Walton based on the cited teachings of Wen-Shyang.

First, Applicants note Walton teaches the legs (20, 22) are tunable to a primary resonance for GPS, and/or to provide vertical polarization at a cellular phone frequency. Second, Walton clearly explains that the disclosed planar arrangement of the antenna (16) is designed to avoid additional and costly manufacturing steps, like forming a hole through a substrate of the antenna, e.g., the window. Third, Applicants note Wen-Shyang does not disclose a grounding conductor since a purpose of Wen-Shyang is to extend or lengthen the excited surface current path of TM_{01} and TM_{10} modes, which lower the first two dominant resonant frequencies of the micro-strip antenna. In other words, Wen-Shyang is concerned with individually adjusting the orthogonal TM modes while Walton merely discloses a window bezel having a conductive path that is used as

a grounding conductor and is totally silent regarding TM modes. Put simply, Walton and Wen-Shyang are directed to totally different antennas wherein one of ordinary skill in the art would not look to Wen-Shyang to solve the above-described deficiency of Walton, that is, providing a radiation element with an inner cut-out portion that exposes the surface of the dielectric substrate therethrough.

To establish *prima facie* obviousness, three basic criteria must be met, the first being that there must be some suggestion or motivation in the applied references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or to combine the teachings of the references. See M.P.E.P. §2143.

Obviousness can only be established by combining or modifying the teachings of the applied art to produce the claimed invention where there is some teaching, suggestion, or motivation to do so found either explicitly or implicitly in the references themselves or in the knowledge generally available to one of ordinary skill in the art. "The test for an implicit showing is what the combined teachings, knowledge of one of ordinary skill in the art, and the nature of the problem to be solved as a whole would have suggested to those of ordinary skill in the art." See *In re Kotzab*, 217 F.3d 1365, 1370, 55 USPQ2d 1313, 1317 (Fed. Cir. 2000). See also *In re Lee*, 277 F.3d 1338, 1342-44, 61 USPQ2d 1430, 1433-34 (Fed. Cir. 2002) (discussing the importance of relying on objective evidence and making specific factual findings with respect to the motivation to combine references); *In re Fine*, 837 F.2d 1071, 5 USPQ2d 1596 (Fed. Cir. 1988); *In re Jones*, 958 F.2d 347, 21 USPQ2d 1941 (Fed. Cir. 1992).

As explained above, one of ordinary skill in the art would not deem it obvious to combine or otherwise modify Walton based on the teachings of Wen-Shyang because there is no motivation in either reference to do so.

Furthermore, Applicants note the slit inlaid by Wen-Shyang is not provided in a central region of the square-ring antenna, rather, the slit is specifically provided at the edge of the patch or antenna. Hence, Applicants respectfully submit Wen-Shyang does not overcome the deficiencies and/or drawbacks of Walton discussed above.

Koriyama is simply cited for teaching it to be known to use semiconductor materials as radiating elements. Therefore, Applicants respectfully submit Koriyama does not overcome or otherwise address the deficiencies of Walton and/or Wen-Shyang discussed above.

As explained above, Walton, Wen-Shyang, and Koriyama, either alone or in combination, fail to teach or suggest each and every feature recited by Claim 1. Therefore, Applicants respectfully submit the combination of Walton and Wen-Shyang, as well as Walton, Wen-Shyang and Koriyama, do not render obvious the subject matter recited by Claim 1. Accordingly, Applicants respectfully submit Claim 1 should be deemed allowable over Walton, Wen-Shyang, and Koriyama.

Claims 2-6 depend from Claim 1. It is respectfully submitted that these five (5) dependent claims be deemed allowable for the same reasons Claim 1 is allowable, as well as for the additional subject matter recited therein.

Applicants respectfully request withdrawal of the rejections.

Conclusion

In view of the foregoing, reconsideration of the application, withdrawal of the outstanding rejections, allowance of the Claims 1-6, and the prompt issuance of a Notice of Allowability are respectfully solicited.

Should the Examiner believe anything further is desirable in order to place this application in better condition for allowance, the Examiner is requested to contact the undersigned at the telephone number listed below.

In the event this paper is not considered to be timely filed, the Applicants respectfully petition for an appropriate extension of time. Any fees for such an extension, together with any additional fees that may be due with respect to this paper, may be charged to counsel's Deposit Account No. 01-2300, **referencing docket number 107355-00102.**

Respectfully submitted,
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